REMARKS

The claims are claims 1 to 3 and 9 to 12.

The specification has been amended to correct a spelling error pointed out in the DECISION ON APPEAL.

Claims 1 and 9 are amended in response to the new grounds of rejection under 35 U.S.C. §112 in the DECISION ON APPEAL.

Claims 1 and 9 are amended to recite operation on digital samples as taught in the application. Claim 1 has been amended to recite digitization of the sampled acoustic signals. Claim 1 is further amended at several places to recite "digitized samples" rather than "samples." Claim 9 has been amended to recite the noise suppression receives "digitized samples" rather than receiving "analog discrete samples." These amendments correspond to the teaching of the original application, particularly A/D converter 106 supplying noise suppression unit 108 as illustrated in Figure 1.

Claims 1 and 9 are amended to particularly recite the smoothed power estimate. As amended, both claim 1 and 9 recite the power smoothing equation disclosed in the original application at page 8, line 5 and page 9, line 28. The DECISION ON APPEAL states at page 7, lines 10 to 18:

> "The claimed recitation misdescribes the disclosed feature as occurring 'over time' whereas it is disclose as occurring 'over a time index.' Because this time index is undefined is the specification as a whole as filed, the claims are considered nonenabled as well. It is also unclear as to how the entire noise suppression circuit and its included and recited FFT can both operate in the spectrum domain yet the recited smoothing function operates apparently in the time domain."

The Applicant respectfully submits that the original application properly describes this time index function and how spectrum domain and time domain are mixed.

The original application at page 8, line 5 and page 9, line 28 includes the equation:

$$P^t(i) = (1-\alpha)\ P^{t-1}(i) + \alpha\ P(i)$$

This equation clearly disclosed the time index. The Applicant respectfully submits that one skilled in the art would realize that $P^t(i)$ is the smoothed power estimate for a current time index t and that $P^{t-1}(i)$ is the smoothed power estimate for an immediately prior time index t-1. Thus this time index is properly disclosed in the original application.

The Applicants respectfully submits that the original application discloses how the invention operates in both the spectrum domain. This application teaches performing the FFT on frames of samples (see page 7, lines 21 to 33). This FFT is performed repeatedly on successive frames of 32 samples. Figure 3 clearly illustrates performing a FFT on groups of time samples. Note block 300 buffers 32 samples. These samples are subject to the FFT in block 304. An inner loop including blocks 308 to 322 operates on each of the 16 points of the FFT selected in block 306. This inner loop includes the absolute value of power computation (block 308) and the smoothed power computation (block 310). Following exit of this inner loop at block 322, block 324 causes the outer loop to repeat if there are any more samples. Thus Figure 3 makes clear that the FFT is computed on successive frames of 32 samples of data.

Claims 1 to 3 and 9 to 11 were finally rejected under 35 U.S.C. 103(a) as made obvious by S. Bloebaum et al. U.S. Patent 6,070,137, filed January 7, 1998.

Claims 1 and 9 recite subject matter not made obvious by Bloebaum et al. Claim 1 recites "calculating a smoothed power estimate by smoothing the power estimate over time." Likewise, claim 9 recites the noise suppression circuit operates to "calculate a power estimate of the transformed windowed signals." The FINAL REJECTION states at page 5, lines 12 and 13 that Bloebaum et al teaches:

> "smoothing the power estimate over time when there is no speech to calculate a noise power estimate (col. 5, lines 37-44 and 60-65)"

Bloebaum et al states at column 5, lines 30 to 44:

> "The adaptation process involves smoothing of the model parameters in order to reduce the variance of the noise estimate. This may be done using either a moving average (MA), autoregressive (AR), or a combination ARMA process. AR smoothing is the preferred technique, since it provides good smoothing for a low ordered filter. This reduces the memory storage requirements for the noise suppression algorithm. The noise model adaptation with first order AR smoothing is given by the following equation:
>
> $$N^{(i)} = \alpha N^{(i-1)} + (1-\alpha)S,$$
>
> where α may be in the range $0<\alpha<1$, but is further constrained to the range $0.8<\alpha<0.95$ in the preferred embodiment of the invention."

This portion of Bloebaum et al clearly teaches smoothing of the vector N from noise model adaption block 46 as a function of the prior noise vector N and the vector S. This is not smoothing the power estimate as claimed.

Claims 1 and 9 each recite calculation of "a gain function from the noise estimate and the smoothed power estimate." Bloebaum et al illustrates transform and filter computation block 56 which receives the power spectral density (PSD) estimate represented by

$|S(e^{j\omega})|^2$ from block 44 and the vector N from noise model adaption block 46 and produces enhancement filter $|H(e^{j\omega})|$. If the vector N is the claimed smoothed power estimate, then transform and filter computation block 56 receives the power spectral density estimate from block 44 and the smoothed power spectral density estimate (vector N) from noise model adaption block 46. These are not the inputs to the calculated gain function recited in claims 1 and 9. Thus if the vector N is the claimed smoothed power estimate, Bloebaum et al fails to make obvious a different limitation of claims 1 and 9. Accordingly, the Appellants respectfully submit that claims 1 and 9 are allowable over Bloebaum et al.

Claims 2, 3, 10 and 11 are allowable by dependency upon allowable base claims.

The Applicant respectfully submits that all the present claims are allowable for the reasons set forth above. Therefore early reconsideration and advance to issue are respectfully requested.

If the Examiner has any questions or other correspondence regarding this application, Applicant requests that the Examiner contact Applicant's attorney at the below listed telephone number and address to facilitate prosecution.

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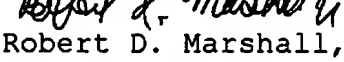
Respectfully submitted,



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